

APPENDIX X.X.X.

**GUIDELINES FOR ASSESSING
THE BOVINE SPONGIFORM ENCEPHALOPATHY
RISK
OF A CATTLE POPULATION**

Article X.X.X.1.

Introduction

The first step in determining the bovine spongiform encephalopathy (BSE) status of the cattle population of a country or zone is the outcome of a risk assessment identifying all potential factors for BSE occurrence and their historic perspective, in particular:

- 1) the potential for introduction and recycling of the BSE agent through consumption by cattle of meat-and-bone meal or greaves of ruminant origin;
- 2) importation of meat-and-bone meal or greaves potentially contaminated with a transmissible spongiform encephalopathy (TSE) or feedstuffs containing either;
- 3) importation of animals or embryos/oocytes potentially infected with a TSE;
- 4) epidemiological situation concerning all animal TSE in the country or zone;
- 5) extent of knowledge of the population structure of cattle, sheep and goats in the country or zone;
- 6) the origin of animal waste, the parameters of the rendering processes and the methods of animal feed production.

The following guidelines are intended to assist Veterinary Administrations in conducting such a risk assessment.

Article X.X.X.2.

The potential for introduction and recycling of the BSE agent through consumption by cattle of meat-and-bone meal or greaves of ruminant origin

Assumptions:

- : That the consumption by bovines of *meat-and-bone meal* or greaves of ruminant origin plays the major role in BSE transmission.
- : That commercially-available animal protein products used in animal feeds may contain *meat-and-bone meal* or greaves of ruminant origin.
- : BSE infectivity has not been identified in milk, tallow or blood and these products are not considered to play a role in the transmission of BSE.

Question to be answered: Has *meat-and-bone meal* or greaves of ruminant origin been fed to cattle within the last 8 years (Article 3.2.13.2 in the *International Animal Health Code*)?

Rationale: If cattle have not been fed animal protein products (other than milk or blood) potentially containing *meat-and-bone meal* or greaves of ruminant origin within the last 8 years, *meat-and-bone meal* and greaves can be dismissed as a risk.

Evidence required:

- ⋮ Documentation supporting that *meat-and-bone meal* or greaves of ruminant origin has not been fed.
- ⋮ Documentation supporting that ruminant rations could not have been contaminated with *meat-and-bone meal* or greaves of ruminant origin during manufacture and distribution.

Rationale: If cattle have been fed animal protein products potentially containing *meat-and-bone meal* or greaves of ruminant origin within the last 8 years, then the extent to which this poses a risk needs to be assessed.

Evidence required:

- ⋮ Documentation describing livestock feeding practices in the country.
- ⋮ Documentation describing the origin and composition (species, class of stock) of the animal protein products fed.
- ⋮ Documentation concerning the rendering processes used to produce such animal protein products, supporting why these processes would have inactivated or reduced the titre of BSE agent, should it be present.
- ⋮ Documentation describing which type of animal were fed animal protein products.
- ⋮ Documentation describing how contamination of cattle rations with *meat-and-bone meal* or greaves of ruminant origin is prevented during production and distribution.

Rationale: If *meat-and-bone meal* or greaves, and animal protein products containing them, are, and have been, fed solely to non-susceptible species (swine, poultry), then there is negligible exposure risk.

Evidence required:

- ⋮ Documentation describing the final use of *meat-and-bone meal* and greaves and its monitoring.
- ⋮ Documentation describing how cross-contamination of cattle rations with *meat-and-bone meal* and greaves is prevented on farm, monitored and enforced.
- ⋮ Documentation supporting that rations intended for non-susceptible species (swine, poultry) could not have been contaminated on farm with *meat-and-bone meal* or greaves of ruminant origin.

Article X.X.X.3.

Importation of meat-and-bone meal or greaves potentially contaminated with a TSE

This point is irrelevant if the assessment outlined in Article 2 indicates that *meat-and-bone meal* or greaves has not been fed, either deliberately or accidentally, in the last 8 years. Nevertheless, documentation should be provided on the control systems (including relevant legislation) in place to ensure that *meat-and-bone meal* or greaves were not fed to cattle.

Assumption: That *meat-and-bone meal* or greaves of ruminant origin plays the major role in BSE transmission.

Question to be answered: Has *meat-and-bone meal*, greaves, or feedstuffs containing either been imported within the last 8 years?

Rationale: Knowledge of the origin of *meat-and-bone meal*, greaves or feedstuffs containing, or potentially containing, either is necessary to assess the risk of release of BSE agent. *Meat-and-bone meal* and greaves originating in countries of high BSE risk pose higher release risk than that from low risk countries. *Meat-and-bone meal* and greaves originating in countries of unknown BSE risk pose an unknown release risk.

Evidence required:

- : Documentation to support claims that *meat-and-bone meal*, greaves or feedstuffs containing them have not been imported OR
- : Where *meat-and-bone meal*, greaves or feedstuffs containing them have been imported, documentation of country of origin and, if different, the country of export.
- : Documentation on annual volume, by country of origin, of *meat-and-bone meal*, greaves or feedstuffs containing them imported during the last 8 years.
- : Documentation describing the composition (on a species and class of stock basis) of the imported *meat-and-bone meal*, greaves or feedstuffs containing them.
- : Documentation, from the country of production, supporting why the rendering processes used to produce *meat-and-bone meal*, greaves or feedstuffs containing them would have inactivated, or significantly reduced the titre of, TSE agent, should it be present.
- : Documentation describing the fate of imported *meat-and-bone meal* and greaves.

Article X.X.X.4.

Importation of animals or embryos/oocytes potentially infected with a TSE

- : Countries which have imported cattle from BSE-infected countries are more likely to experience BSE.
- : Animals pose a greater risk than embryos/oocytes (under study).
- : Cattle pose the only known risk although other species are under study.

- : Animals imported for breeding may pose a greater risk than animals imported for slaughter because of the hypothetical risk of maternal transmission and because they are kept to a greater age than animals imported for slaughter.
- : Risk is influenced by the date at which imports occurred, relative to the BSE status of the country of origin.
- : Risk is proportional to volume of imports (Article 1.3.2.3).

Question to be answered: Have animals, embryos or oocytes been imported within the last 7 years?

Rationale: The release risks are dependent on:

- : country of origin and its BSE status, which will change as more data become available; this may result from the detection of clinical disease, or following active surveillance, or assessment of geographical BSE risk;
- : feeding and management of the animals in the country of origin;
- : use to which the commodity has been put as apart from representing risk of developing clinical disease, the slaughter, rendering and recycling in *meat-and-bone meal* of imported animals represents a potential route of exposure of indigenous livestock even if *meat-and-bone meal* and greaves, or feedstuffs containing them, have not been imported;
- : species;
- : dairy versus meat breeds, where there are differences in exposure in the country of origin because feeding practices result in greater exposure of one category;
- : age at slaughter.

Evidence required:

- : Documentation on the country of origin of imports. This should identify the country of breeding of animals (including donors of embryos/oocytes), and of any other country in which they have resided during their lifetime.
- : Documentation describing origins, species and volume of imports.
- : Documentation describing the fate of imported animals, embryos or oocytes, including the age at slaughter.
- : Documentation demonstrating that risks are periodically reviewed in light of evolving knowledge on the BSE status of the country of origin.

Article X.X.X.5.

Epidemiological situation concerning all animal TSE in the country or zone

Assumptions:

- : BSE may have originated from scrapie of sheep. Countries with scrapie may be at greater risk than those which have demonstrated scrapie freedom. Theoretically, scrapie in small ruminants might mask the presence of BSE and no field methods are available to differentiate between different TSEs.
- : Available evidence suggests there is no link between chronic wasting disease of cervids and BSE.
- : It has been suggested that transmissible mink encephalopathy may be an indicator of a hitherto undefined and hypothetical TSE of cattle.
- : If a hypothetical 'spontaneous' TSE of cattle is assumed to occur, it must also be assumed to occur in all countries at a similar rate.

Question to be answered: Have other animal TSEs been identified in the country? What surveillance is there for TSEs?

Rationale: Surveillance programmes generate a picture of the epidemiological situation of animal TSE. The greater the surveillance effort, the greater the power of the information. Adequately targeted surveillance for BSE, such as described in Appendix 3.8.3., provides more powerful information than generic animal disease surveillance.

Evidence required: Documentation on awareness and surveillance programmes targeting all TSEs of livestock, their legal basis, scale, duration, and data generated.

Article X.X.X.6.

Extent of knowledge of the population structure of cattle, sheep and goats in the country or zone

Assumptions:

- : The occurrence of scrapie and the uniquely high ratio of sheep to cattle in the United Kingdom may have facilitated the transmission of scrapie into cattle, although such a ratio has not been observed in other countries where BSE has become endemic.
- : No breed differences in susceptibility have been demonstrated in cattle, although the BSE risk may be higher where dairy animals are fed greater quantities of supplementary feed containing meat-and-bone meal or greaves.

Questions to be answered: What systems are in place to identify herds and flocks? What is the size and geographical distribution of the sheep population and what proportion is dairy animals? What is the size and geographical distribution of the cattle population and what proportion is dairy animals?

Rationale:

- : If scrapie is present, the risk of endogenously generated release of BSE, originating from scrapie, will be less where the ratio of sheep to cattle is lower.

Appendix XXI (contd)

- : Where intensive dairy farming is practiced, access of livestock to concentrate feeds containing meat-and-bone meal and greaves may be more likely.
- : A well structured system for herd and flock identification will provide a solid basis for the knowledge of the structure and distribution of cattle, sheep and goat populations.

Evidence required:

- : Documentation describing the structure and geographical distribution of bovine and ovine populations.
- : Documentation describing herd and flock identification systems.

Article X.X.X.7.

The origin of animal waste, the parameters of the rendering processes and the methods of animal feed production

Assumptions:

- : TSE of livestock have long incubation periods and insidious onset of signs, so cases may escape detection.
- : Pre-clinical TSE cannot be detected by any method and may enter rendering, in particular if specified risk materials are not removed.
- : Tissues most likely to contain high titres of TSE infectivity (brain, spinal cord, eyes) may not be harvested for human consumption and may be rendered.
- : TSE of livestock may manifest in sudden death, chronic disease, or recumbency, and may be presented as fallen stock or materials condemned as unfit for human consumption.
- : TSE agent survival in rendering is affected by the method of processing. Adequate rendering processes are described in Appendix 3.6.3.
- : TSE agent is present at much higher titres in central nervous system and reticulo-endothelial tissues (so-called 'Specified Risk Materials', or SRM).

Question to be answered: How has animal waste been processed over the past 8 years?

Rationale: If potentially infected animals or contaminated materials are rendered, there is a risk that the resulting meat-and-bone meal could retain TSE infectivity.

Where meat-and-bone meal is utilized in the production of any animal feeds, the risk of cross contamination exists.

Evidence required:

- : Documentation describing the disposal of fallen stock and materials condemned as unfit for human consumption.
- : Documentation describing the definition and disposal of Specified Risk Material, if any.
- : Documentation describing the rendering process and parameters used to produce *meat-and-bone meal* and greaves.
- : Documentation describing methods of animal feed production, including details of ingredients used, the extent of use of *meat-and-bone meal* in any livestock feed, and measures that prevent cross-contamination of cattle feed with ingredients used in monogastric feed.
- : Documentation describing monitoring and compliance of the above.

Article X.X.X.8.

The overall risk of BSE in the cattle population of a country or zone is proportional to the level of known or potential exposure to BSE infectivity and the potential for recycling and amplification of the infectivity through livestock feeding practices. For the risk assessment to conclude that the cattle population of a country or zone is free from BSE risk, it must have demonstrated that appropriate measures have been taken to manage any risks identified.